The Microdiagrams of a State of Binary Systems in Condition of High Gravitation.

Sh. Mavlonov[C] and B. Makhmudov
Samarkand State University after A.Navoi
Samarkand City University blvd. 15 physical faculty

S. Rabimov[S]
College of Tourism. Samarkand City, Saratepo Estate
Translation Department

The diagram of a state of systems allows one to calculate the coefficient of segregation. In our research [1,2] the task was to put on a basis of experimental data the coefficient of segregation to construct the microdiagram of a state of binary system under conditions of the high gravitation. When the concentration of an impurity of B in A is much less than 1%, the usual methods of the physico-chemical analysis are not applicable for construction of the diagrams of a states, as the concentration of impurity is less than 1% sensitivity of thermographical analysis is insufficient for fixation of temperature change of melting of an alloy. These changes of temperature can be calculated from the equation of Vant-Goff

$$\Delta T = T_A - T = \frac{RT_A^2 C_1}{\Delta H}$$

Where T_A-temperature of melting of the solvent A, T-temperature of melting of an alloy A+B at concentration B in A is equal to C_w, ΔH-enthalpy of melting and R-gas constant.

With research into the phenomenon of crystallization in conditions of high gravitation (in centrifuge) a>>g it became possible to define the coefficient of segregation of a mixture in conditions of high gravity that have enabled the construction of microdiagrams under conditions of high gravitation. Certainly, at this construction the occurrence of additional pressure in a liquid because of acceleration of a liquid in a centrifuge was taken into account and will result either in an increase or a reduction of the temperature of liquids. The pressure P in a liquid was calculated using the formula:

$$P = d_l ah$$

Where d_l -density of a liquid, a-acceleration, h-height of a liquid.

Thus, if in conditions a=1g (g=9,8m/s^2) a change of the temperature of a liquid occurs only with the change of structure of an alloy, in conditions of high gravitation a>>g the change of temperature occurs both to change of structure and with change of pressure

$$\Delta T = \Delta T(p) + \Delta P(c)$$

The changes of temperature of melting depending on pressure are defined from the Clausius Clapeyron equation,

$$\frac{dT}{dP} = \frac{Vh - Vs}{Sm} = \frac{Tm}{qm}\frac{(1-1)}{(dh - ds)}$$

The microdiagrams of systems Al-an impurity, Pb-an impurity are constructed.

[1] Sh. Mavlonov, B.Mahmudov, T.Alimov, Some microdiagrams of a condition of systems al-an impurity in conditions of the high gravitation. The Bulletin of the St-Petersburg University, sep 4 V3 **18,**.116-118 (1999).
[2] Sh. Mavlonov, H.Shodiev, Physic-chemical analysis under conditions of high gravity. “Centrifugal processing” edit Prof. L.Regel and Prof. W.Wilcox. Press, N.Y, 235-240, (2001).